



June 6, 2003

Mr. William J. Keese
Chairman
California Energy Commission
1516 Ninth Street, MS-32
Sacramento, CA 95814

Dr. Alan C. Lloyd
Chairman
Air Resources Board
1010 I Street
Sacramento, CA 95814

**Subject: California Strategy to Reduce Petroleum Dependence
(CEC Docket No. 01-SRPD-1)**

Dear Messrs. Keese and Lloyd:

The Alliance of Automobile Manufacturers (Alliance) is a trade association of ten car and light-truck manufacturers representing over 90-percent of new vehicles sales in California¹. We are hereby submitting our comments and recommendations on the draft report Strategy to Reduce Petroleum Dependence ("SRPD draft report"), to the extent we have been able to compile them in the short time allowed.

Automakers recognize the hard work your staff put into preparing the 895-page SRPD draft report. Over the last two years, they have undoubtedly faced many of the same difficulties that others have faced over the last three decades attempting to deal with a topic containing a complex mix of technical, economic, environmental, societal, and political issues.

Clean Transportation Fuels

Appropriately, the draft report highlighted the important role that clean petroleum-based fuels play in enabling automobiles to operate as cleanly as they are designed to do. Over the last decade, California's policy of treating vehicles and their fuels as a system has helped produce some of the most dramatic air quality improvements achieved anywhere in the world. Cleaner fuels provide immediate and direct air quality benefits from the entire existing vehicle fleet as well as enabling the introduction of even cleaner advanced vehicle technologies.

Cleaner petroleum fuels are also essential for enabling the most promising automotive technologies for increased fuel economy. Cleaner diesel fuel, in particular, is essential for enabling highly efficient diesel engines. Automakers are continuing to work very hard to

¹ The Alliance of Automobile Manufacturers ("the Alliance") members are BMW Group of North America, Inc., DaimlerChrysler Corporation, Ford Motor Company, General Motors Corporation, Mazda North American Operations, Mitsubishi Motor Sales of America, Inc., Nissan North America, Inc., Porsche Cars North America, Inc., Toyota Motor North America, Inc., and Volkswagen of America, Inc.

perfect the emission control technology that will allow these vehicles to meet California's very challenging tailpipe emissions standards. This new after-treatment technology is poisoned by fuel sulfur. For this reason, the US EPA adopted ultra-low sulfur fuel requirements and California is now following suit. In the future, California (and EPA) should consider harmonizing its fuel quality standards with those already on the books in Europe. This will lower the overall cost of fuels around the world and provide a consistent high quality product in all the major markets.

We are pleased that California is also considering adopting a new lubricity standard based on the High Frequency Reciprocating Rig (HFRR) test.² This new standard will help enable the introduction of the common rail diesel engines becoming popular in Europe. These highly efficient engines operate under extremely high pressures and require adequate fuel lubricity to avoid engine damage.

In addition, the SRPD draft report recognizes the potentially important role that alternative and renewable, domestic energy sources can play in improving energy security and meeting a variety of environmental and economic goals. For example, many well-to-wheel greenhouse gas studies, such as the one conducted for the SRPD draft report, have consistently pointed to ethanol from biomass as a fuel source that can help reduce net carbon dioxide (CO₂) emissions.

Alliance members, in recent years, have sold over three million ethanol flexible fuel vehicles to U.S. consumers, and the number of these vehicles on the roads is expected to grow significantly in the next few years. These vehicles can run on any mix of gasoline and ethanol up to a maximum ethanol content of 85 percent by volume. This flexibility has clear value in responding to potential supply disruptions of petroleum fuel. These "flex fuel" vehicle programs are making a critical contribution toward solving the "chicken and egg" problem associated with introducing any new mass-market fuel. Fuel suppliers need a substantial number of alternative fuel vehicles on the roads before they will invest in a fuel supply infrastructure for those vehicles while vehicle manufacturers need assurance that their customers will be able to find the alternative fuel before they are willing to market large numbers of alternative fuel vehicles. Since these flex fuel vehicles can use conventional fuel while suppliers make ethanol more widely available, they help overcome this fundamental market challenge.

Even though the U.S. ethanol supply infrastructure has been growing dramatically, supply and refueling infrastructure remains the biggest obstacle to more widespread use of ethanol. There is also an important role for expanded research into better technologies for converting biomass into ethanol. These are important areas where government involvement will be essential for achieving the potential that this alternative energy source provides.

Longer term, hydrogen holds great promise as a transportation fuel but faces many of the same infrastructure issues as other alternative fuels. Government has an essential role in conducting research and removing barriers for future widespread use of hydrogen. The state of California and its Congressional delegation can help by promoting policies that will foster the development of ethanol, hydrogen and other alternatives to petroleum as future sources of transportation fuels.

² See ASTM D6079.

Light-Duty Diesel

Automakers were disappointed that the SRPD draft report discounted the potential benefits of increased light-duty diesel technology in California. We believe the report's assumption of only a 10 percent penetration level was far too conservative given the time frame covered by the analysis. Rather than treating diesel as an alternative fuel, the SRPD draft report should have grouped it with other fuel efficiency technologies, such as hybrid electric (which can be built with diesel engines as well as gasoline) and calculated its benefits by assuming a 100 percent penetration, as it did with hybrids. In some European countries, light-duty diesel penetration rates already far exceed 50 percent. Indeed, due to their popularity, diesel engines now power about 40 percent of the light-duty vehicles across Europe.

When this issue was discussed at the workshop, staff stated they chose 10 percent because of the uncertainty associated with the ability of light-duty diesel vehicles to meet California's stringent emission standards. It is true that this remains a challenge, as mentioned above, but the SRPD draft report's timeframe extends far enough out to allow some confidence that automakers will meet this goal. By contrast, the SRPD draft report assumes hydrogen fuel cell penetrations of 20 and 30 percent in the same time frame. In fact, the uncertainty associated with hydrogen fuel cell vehicles far exceeds that associated with diesel emission control technology. We think the SRPD draft report should adjust its assumptions about the penetration of different technologies to make them more internally consistent. At a minimum, the report should bracket diesel's possible contributions by assuming penetrations from some level higher than fuel cell penetration to 100 percent.

Issues with the Option 1A Analysis

We believe the gasoline demand reductions and benefits for Option 1A are overstated due to the use of studies that overestimate the benefits and underestimate the costs of fuel efficient technologies. The analysis uses three fuel economy studies as its basis: American Council for an Energy-Efficient Economy (ACEEE); the National Research Council (NRC); and the Energy and Environmental Analysis, Inc. (EEA). The SRPD draft report supplements the ACEEE study with reduced costs for hybrid technology supplied by ARB. Of these three reports, the NRC report contains the smallest potential fuel economy improvement, and even these potential fuel economy improvements were overstated, as discussed in Attachment 1. The other two reports rely primarily on advancements analyzed in the NRC report, but appear to simply lower the cost or inflate the benefits, and are far less credible than the NRC report. We include very brief critiques of the NRC and ACEEE reports in Attachment 1.

The industry also notes that there is inconsistency between this and other CEC reports. While the SRPD draft report optimistically projects that there will be a net savings to customers from switching to hybrid electric vehicles, we note that this is in direct conflict to the CEC report *California State Vehicle Fleet Fuel Efficiency Report: Volume I*, dated April 2003, that concluded that the state would lose \$1.3 million dollars over three years if it purchased 254 Honda Civic HEVs (page 6). The report concludes that the vehicles would not pay back the initial purchase price in fuel savings even over the full life of the vehicles.

We have concerns with several other assumptions that were applied for Option 1A. For example, the SRPD draft report assumes all of the new technology identified in the SRPD draft report will completely saturate the marketplace by 2014. Both the lead-time (beginning in 2008) and the phase-in (seven-year) are completely unrealistic given they implement fundamental technology changes across every vehicle category. The NRC report on fuel economy cautioned³,

[T]echnology changes require very long lead times to be introduced into manufacturers' product lines. Any policy that is implemented too aggressively (that is, in too short a period of time) has the potential to adversely affect manufacturers, their suppliers, their employees, and consumers. Little can be done to improve the fuel economy of the new vehicle fleet for several years because production plans already are in place.

A relatively simple change from carburetors to fuel injectors took close to ten years in the real world of product cycles, manufacturing, and economics.

The SRPD draft report concludes that it is technically possible to more than double the efficiency of new cars and light-duty trucks using existing and emerging automotive technologies. This statement is inaccurate and incomplete at best. The Alliance challenged many of the overly optimistic assumptions and questionable methodologies used in the NRC fuel economy report, but even still, it concluded in Tables 4-2 and 4-3 (page 67):

- Even under the most optimistic case (the 14-year cost recovery scenario), only subcompact cars can cost effectively achieve over 35 miles per gallon (35.1 mpg – 14 year payback) and no light truck can achieve over 30 miles per gallon.
- None of the vehicle segments were projected to achieve a doubling of fuel economy.
- Looking at the three year payback scenario the best fuel economy achieved by any passenger car was the subcompact (30.3 mpg) and the best truck fuel economy was projected to be in the small SUV class (24.7 mpg)

Moreover, making public policy decisions based on projections that ignore tradeoffs between fuel economy and other vehicle attributes such as power, safety, and design is likely to impose substantial opportunity costs on consumers and producers and to impose substantial net costs on society, both absolutely and relative to other measures to conserve fuel and to address energy security issues. In Attachment 2, Pennsylvania State Professor Andrew Kleit takes into account not just the estimated direct engineering costs and benefits associated with fuel economy regulations, but also the indirect or opportunity costs.⁴ Kleit finds that the marginal cost of increasing the light truck CAFE standard from 20.7 to 22.2 mpg by model year 2007 exceeds the marginal benefit by a factor at least 9 to 1 and that the proposed standard would be more than 50 times more costly than a 2.4 cents per gallon increase in the gasoline tax – the increase that would be required to save the same amount of fuel as the CAFE increase.

³ National Research Council, "Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards," 2002 (page 5).

⁴ Kleit, Andrew, "The Costs and Benefits of NHTSA's Proposed Increase in Truck CAFE Standards," February 2003.

Rational consumers do not simply compare the present value of fuel savings with hardware costs. They can choose to spend the same purchasing dollars on any number of attributes besides fuel economy. The question is not whether the value exceeds the cost for any one application such as increased fuel economy; the question is whether the value exceeds the cost of all the applications, giving consumers their highest value for the money. Economists call this concept the “equal marginal principle” and it is a fundamental principle underlying their analysis of consumer and producer behavior. To quote MIT Professor Robert Pindyck and University of California Professor Daniel Rubinfeld:

“Only when the consumer has satisfied the **equal marginal principle** – i.e., *has equalized the marginal utility per dollar or expenditure across all goods* – will she have maximized utility.”⁵ [Boldface and italics in original.]

Corporate Average Fuel Economy Standards

We note the passage in the SRPD draft report recognizing that regulating motor vehicle fuel economy is within the “sole domain of the federal government.” The federal CAFE law includes a strong express preemption provision that prohibits individual states or municipal governments from enacting laws or regulations that relate to the fuel economy of automobiles:

When an average fuel economy standard prescribed under this chapter is in effect, a State or a political subdivision of a State may not adopt or enforce a law or regulation *related to* fuel economy standards or average fuel economy standards for automobiles covered by an average fuel economy standard under this chapter. (emphasis added)⁶

The use of the broad “related to” language in the above passage means that Congress intended to preempt more than just state-specific CAFE standards (although these are clearly prohibited). Under the “related to” language, any state law or regulation that has the intent or the effect of influencing motor vehicle fuel economy is also preempted. So, for example, the Department of Transportation relied on this language to head off a Maryland plan for a “feebate” scheme to encourage the purchase of vehicles with higher fuel economy. Because CO₂ emissions from vehicles are directly proportional to the amount of fuel consumed, any attempt to regulate CO₂ emissions from new motor vehicles would be functionally equivalent to setting new fuel economy standards, and thus would also be preempted. Congress has directed that any such standards may only be enacted at the national level, and only after a careful analysis by DOT of the various factors listed in the CAFE law. So, it is clear that any standards governing motor vehicle CO₂ emissions are also within the “sole domain of the federal government.”

CAFE standards have been very problematic for both automakers and government policymakers since they were enacted as part of the Energy Policy and Conservation Act of 1975. This law directs the U.S. Department of Transportation to set standards at the maximum feasible level taking into account technical feasibility, economic practicability, the effect of other regulations on fuel economy, and the need of the nation to conserve petroleum.⁷

⁵ Robert S. Pindyck and Daniel L. Rubinfeld, *Microeconomics* (2001), p. 91.

⁶ 49 U.S.C. § 32919

⁷ 49 U.S.C. § 32902(f).

The CAFE program is nonetheless a reality and the National Highway Traffic Safety Administration (NHTSA) continues to review, analyze and set standards at maximum feasible levels. In establishing “maximum feasible” fuel economy standards, NHTSA is required to consider many factors not included in the California study. For example, after observing the unfavorable impact that CAFE standards have produced on traffic safety, NHTSA made safety considerations an integral part of the analysis it performs in setting CAFE standards.

To assess how all of these factors come together, automakers submit detailed future product plans and other technical information to NHTSA for use in setting future CAFE standards. Much of this information is highly sensitive and confidential, and therefore not available to the authors of the SRPD draft report. However, there are many conflicts between automakers' technical information and the public domain studies that influenced this SRPD draft report's fuel economy recommendation.

Because it is impossible to foresee at this time what may be feasible in 2020, it would be unwise for California legislators to follow the SRPD draft report's draft recommendation of promoting enactment of 100 percent higher standards by 2020. A long list of severe adverse impacts would be expected to fall on the U.S. economy, consumers, and the automobile industry if CAFE standards were set at the levels recommended in the SRPD draft report. For example, the U.S. Department of Energy's Energy Information Agency (EIA) analyzed truck CAFE standards of 21.2, 21.7 and 22.2 mpg in 2005-2007 MY, respectively, in response to the NHTSA Notice of Proposed Rulemaking for CAFE Standards for model year 2005-2007 light trucks.

These truck CAFE increases were forecast to cost 105,000 U.S. non-agricultural jobs by 2010, result in cumulative discounted GDP losses of \$31 billion, and raise truck prices by \$275 per vehicle by 2010 (expressed in 2001 dollars). Vehicle weight was forecast to be reduced compared to the baseline projection of industry trends without the CAFE increase. The EIA analysis is contained in Attachment 3. The Alliance also submitted significant comments on the NHTSA light-truck rulemaking that should be considered by CEC and ARB in developing the SRPD draft report and recommendations. We include these comments as Attachment 4.

Adverse Environmental Impacts of CAFE – Rebound Effect

While the CAFE system has produced many unintended consequences, the impact on urban air quality warrants special attention, since the simplifying assumptions used for the modeling in the SRPD draft report mask these consequences. Specifically, the SRPD draft report did not model the “rebound effect” by which improved fuel economy lowers the cost per mile of travel, thereby resulting in more miles of travel. Because tailpipe emissions are controlled in grams per mile, more miles result in more grams of pollutants. The rebound effect would increase vehicular air pollution and mitigate the expected fuel usage reductions and associated environmental benefits from these reductions. Ignoring this well-known effect is inappropriate.

Highlighting the importance of the rebound effect, Appendix B of the SRPD draft report attributes VMT increasing at twice the rate of population growth to two factors – reduced gas prices and rising fuel economy. “The fact that travel since 1980 has increased at almost twice the rate of population growth is also explained by two phenomena: declining real gasoline prices through the mid-1980s and rising vehicle fuel economy through the late 1990s.” Appendix D

also notes the rebound effect, but states that it is under study separately and not included in the SRPD draft report. Finally, the SRPD draft report does not dispute the existence of the rebound effect but only the size of it. In Appendix A, page I-4, the SRPD draft report concludes, "There is much controversy about the size of the rebound effect in California." Despite any real or perceived controversy, ample information exists upon which to estimate the size of the rebound effect.

In 1994 the Clinton Administration convened a dialogue on fuel economy among auto industry, environmental, think tank, and government participants, dubbed "Car Talk." The participants agreed to use a rebound estimate of 35 percent. Supporting the Car Talk estimate, a recent survey article by Greening, Greene, and Difiglio (Energy Policy 28 (2000) 389-401) estimates the rebound effect at between 20 and 50 percent.⁸

The Car Talk 35 percent estimate of the rebound effect remains reasonable, and should be coupled with a sensitivity analysis of 20 percent and 50 percent.

The rebound effect could substantially alter the draft conclusions and recommendations in the SRPD draft report, and must be explored thoroughly before fundamental decisions can be made on the issues explored in this report. The rebound effect would reduce the environmental benefits of all types calculated in the SRPD draft report. In the case of urban air quality, the impact could reverse the air quality forecast from slightly positive to sharply negative. NHTSA uses a rather modest 20 percent rebound effect in their final rule on their 2005 – 2007 model year light-truck fuel economy mentioned above. However, even this modest rebound effect was sufficient to result in a net increase in smog-forming emissions. The net emissions increase resulted from the higher vehicle emissions (due to increased VMT) coupled with the higher-than-projected upstream emissions.

Had our May 12, 2003, request for more time to adequately review the SRPD draft report been granted, this is the type of additional analysis that would have proven helpful in determining the reliability of data underlying the SRPD draft report's recommendations.

State Revenue Will Be Impacted

Task 3, Petroleum Reduction Options, includes the loss of government revenue in determining the present value of net benefits. However, the loss in sales tax is ignored. Sales tax is over half of the state excise tax and would substantially alter the economic findings – the draft SRPD report estimates that state revenue losses from the excise tax alone will exceed \$15 billion in the 2003 to 2030 timeframe from the ARB Mild Hybrid option during that timeframe. Moreover, there is no mention of the loss in State revenue in the 20-page summary. We recommend ARB and CEC determine the impact on state revenues from both excise taxes and sales taxes and include this important information for policy makers in the 20-page summary SRPD draft report.

⁸ This review concluded that energy policies were "50 [percent] to 80 [percent] effective" -- that is for transportation and other energy uses, the rebound effect is between 20 percent and 50 percent. This survey article reviewed 75 articles on the rebound effect, including 22 on automotive transport. Very few of the reviewed studies showed a rebound effect of less than 20 percent except for the short term, and several of the reviewed studies showed rebound effects of up to 50 percent.

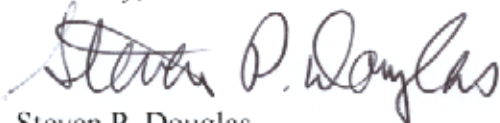
Conclusion

Affordable, reliable energy supplies are a key ingredient for economic growth. Petroleum has played a fundamental role in generating this growth in California and elsewhere, and it can be expected to continue as a central part of the energy supply mix well into the future. While much good work is underway to diversify and improve the system for powering transportation, lead times in this sector are long, commercial viability is essential, and mistakes are expensive. Going forward, these factors should influence the interpretation of this report and its recommendations.

Development and implementation of the new technologies that would be required to meet these goals cannot be reliably scheduled, and their costs can escalate dramatically due to unforeseen events. Pursuit of arbitrary targets and timetables set years – or in this case decades – in advance can result in wasted resources. Implementation of any adopted policies, therefore, needs to be flexible and work through the market.

The Alliance appreciates your consideration and look forward to working with the CEC and ARB on this important issue.

Sincerely,

A handwritten signature in dark ink, appearing to read "Steven P. Douglas". The signature is fluid and cursive, with the first name "Steven" being more prominent.

Steven P. Douglas
Alliance of Automobile Manufacturers

cc: Susan Brown, CEC
Chuck Shulock, ARB